

REMARKS

Claims 1, 2, 5, 7, 11, 12, 15, 17, 21, 26 and 27 have been amended. In particular, independent claims 1, 11 and 21 have been amended to include, among other things, the features of original claims 6 and 16. Accordingly, claims 6 and 16 have been cancelled. Applicants respectfully submit that the pending claims are now in a condition of allowance and that reconsideration and allowance of all of the pending claims are respectfully requested.

Rejections under 35 U.S.C. § 102

The Examiner rejected claims 1-3, 8, 9, 21 and 26 under 35 USC 102(e) as being anticipated by U.S. Patent Application Publication No. 2001/0054758 to Harlan R. Isaak ("*Isaak*"). Applicants respectfully request reconsideration of this rejection for the following reasons.

As for claim 1, claim 1 has been amended to include, among other things, features of original claim 6. Amended claim 1 now includes the feature "the intermediate substrate comprising of a substantially solid core having a first side and a second side, the solid core comprising of a material reinforced with a matrix to increase stiffness and control the coefficient of thermal expansion of the intermediate substrate."

Isaak does not disclose, teach or suggest such a feature. Instead, Isaak at best discloses an intermediate substrate ("interconnect frame") disposed between two microelectronic packages (base layers 12) to align interconnections (feed through holes 48) between two sets of conduction pads (base pads 26, 30) located on each of the microelectronic packages. See paragraphs 35-36 of *Isaak*. That is, Isaak does not disclose an "intermediate substrate comprising of a substantially solid core having a first

side and a second side, the solid core *comprising of a material reinforced with a matrix to increase stiffness and control the coefficient of thermal expansion of the intermediate substrate.*” Nor does *Isaak* suggest such a feature.

Further, the Examiner in rejecting claim 6 under 35 USC 103(a) as being obvious over *Isaak* in view of U.S. Patent No. 4,327,143 to Alvino et al. (“*Alvino*”) asserts that it would have been obvious to one having ordinary skill in the art to incorporate the teaching of *Alvino* into the device taught by *Isaak* “because it is desirable to hold the chip in place.” Applicants respectfully disagree. *Isaak*, among other things, is cited for the proposition that it discloses a microelectronic package array comprising a first microelectronic package, a second microelectronic package and an intermediate substrate. In contrast, *Alvino* was cited for the proposition that *Alvino* teaches a circuit board comprising a core sheet material that includes a C-stage resin (See col. 12, lines 36-40). Applicants respectfully submit that the rationale (i.e., “because it is desirable to hold the chip in place”) for combining the teachings of *Isaak* with the teachings of *Alvino* is unfounded in light of what is taught in *Isaak*.

That is, the Applicants respectfully submit that there is no motivation to combine the teachings of *Alvino* with what is taught in *Isaak*. The intermediate substrate (interconnect frame 34) as disclosed in *Isaak* is clearly shown (see FIGS. 2 and 8) to be detached from the chip (body 72 of the integrated circuit chip). Such an intermediate substrate would not prevent the chip from moving. Further, the chip as disclosed in *Isaak* appears to be secured to the underlying substrate via solder balls (conductive contacts 82). See paragraph 44 of *Isaak*. Therefore, there is no reason or suggestion for the intermediate substrate, as taught in *Isaak*, to be used in holding the chip in place

since using an intermediate substrate for such purposes would be unnecessary and redundant. In this case, Applicants respectfully submit that the Examiner used impermissible hindsight in order to come up with the claimed invention as it relates to original claim 6 (the features of which have now been incorporated into claim 1). For at least these reasons, Applicants submit that claim 1 is patentable over *Isaak*.

Claim 21 has also been amended to include similar features and is therefore, likewise patentable over *Isaak*. Claims 2-3, 8, 9, and 26 depend from and add additional features to claims 1 or 21. Thus, by virtue of their dependency, claims 2-3, 8, 9, and 26 are also patentable over *Isaak*.

Rejections under 35 U.S.C. § 103

The Examiner rejected claims 4, 5, 7, 10, 22-25 and 27 under 35 USC 103(a) as being obvious over *Isaak* in view of U.S. Patent No. 5,591,353 to Davignon et al. (*Davignon*), U.S. Patent No. 4,327,143 to Alvino et al. (*Alvino*), U.S. Patent No. 5,952,440 to Walisser et al. (*Walisser*) and/or U.S. Patent No. 5,145,303 to Clarke (*Clarke*). Applicants respectfully submit that claims 4-6, 10, 22-25 and 27 are patentable over *Isaak* in view of *Davignon*, *Alvino*, *Walisser* and/or *Clarke* for at least the following reasons.

Claims 4, 5, 7, 10, 22-25 and 27 are dependent on claims 1 or 21, and therefore, incorporate the features of claims 1 and 21. The deficiencies of *Isaak* as discussed above for claims 1 and 21 are not overcome by *Davignon*, *Alvino*, *Walisser* and/or *Clarke*. Therefore, for at least the reasons discussed above for claims 1 and 21, claims

4-7,10, 22-25 and 27 are patentable over *Isaak* in view of *Davignon, Alvino, Walisser* and/or *Clarke*.

The Examiner rejected claim 11 under 35 USC 103(a) as being obvious over *Isaak* in view of U.S. Patent No. 6,054,337 to Solberg (*Solberg*). Applicants respectfully submit that claim 11 is patentable over *Isaak* in view of *Solberg* for at least the following reasons.

Claim 11 has been amended to include the same features that were added to amended claims 1 and 21. The deficiencies of *Isaak* as discussed above for claims 1 and 21 are not overcome by *Solberg*. Therefore, for at least the reasons discussed above for claims 1 and 21, claim 11 is patentable over *Isaak* in view of *Solberg*.

The Examiner rejected claims 12-15 and 17-20 under 35 USC 103(a) as being obvious over *Isaak* in view of *Solberg, Davignon, Alvino* and/or *Walisser*. Applicants respectfully submit that claims 12-20 are patentable over *Isaak* in view of *Solberg, Davignon, Alvino* and/or *Walisser* for at least the following reasons.

Claims 12-15, and 17-20 depend from and add additional features to claim 11. The deficiencies of *Isaak* as discussed above for claims 1 and 21 are not overcome by *Solberg, Davignon, Alvino* and/or *Walisser*. Thus, by virtue of their dependency, claims 12-15 and 17-20 are also patentable over *Isaak* in view of *Solberg, Davignon, Alvino* and/or *Walisser*.

Conclusion:

In view of the foregoing, claims 1-5, 7-15, and 17-27 are in condition of allowance. Early issuance of Notice of Allowance is respectfully requested. The Examiner is encouraged to telephone the undersigned if there are any remaining questions of patentability, and a telephone interview would be helpful in resolving these questions.

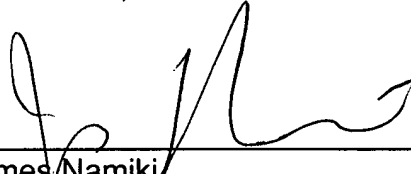
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